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AUTHOR Bowman, Harry L.; Webb, Emily J.
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ABSTRACT

A study was conducted to investigate the reading comprehension and educationally related characteristics and relationships that describe the Navy's recruit population. The variable of primary interest was the recruit's reading comprehension grade level score; other variables were years of education, aptitude score, high school graduation status, and month of entry into the Navy. The study was conducted because the variability in the numbers of recruits who need reading remediation in language skills has a direct impact on the requirements for staffing and instructional materials. Nearly 80,000 recruits (who entered the service between June 1986 and May 1987) took the Gates-MacGinitie Reading Comprehension Test and the Armed Services Vocational Aptitude Battery. Data analyses of their scores revealed that the typical Navy recruit completed slightly less than 12 years of education, with reading comprehension near the 12th grade level. Findings suggest that the recruit population remains relatively stable, showing only slight variability with regard to years of education, reading comprehension skills, and aptitude scores. However, from month-to-month the recruits vary on reading scores, graduation status, and the number who read below grade six. (Nine tables of data are included.) (MM)

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U.S. NAVY RECRUIT CHARACTERISTICS ON READING COMPREHENSION AND EDUCATIONALLY RELATED VARIABLES: A TWELVE-MONTH PROFILE FROM JUNE, 1986, TO MAY, 1987

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Harry L. Bowman
College of Education
Memphis State University
Memphis, Tennessee 38152

Emily J. Webb
Chief of Naval Technical Traiaing
Naval Air Station Memphis
Millington, Tennessee 38054

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Introduction

As early as the World War II time period, the Department of the Navy initiated programs designed to remediate deficiencies in academic skills among selected personnel. The first official policy on remedial training in basic skills was established by the Secretary of the Navy on 2 June 1978. The Secretary stated: "It is the policy of the Department of the Navy to provide, when indicated, on-duty remedial job-relevant basic skills training in order to fill personnel requirements" (SECNAVINST 1510.3, 1978, p. 1). [Job-relevant basic skills are defined as "those capabilities prerequisite to efficient completion of Navy training programs, adequate job performance and career advancement. Notable among these are literacy, study and computational skills" (p. 1).] In addition to new programs being developed as a result of the policy statement, fundamental skills training programs that were already operational were given official recognition by the Department of the Navy. One operational program, Academic Remedial Training (ART), provides instruction for recruits in basic reading and study skills as well as verbal skills needed to complete the demanding academic requirements of recruit training.

The ART Program was initiated officially in 1967 by the Naval Technical Training Command at each of the Navy's three Recruit Training Centers as a remedial reading course. The courses at the three sites utilized different curricula and testing plans due to the autonomy permitted in course development. Eventually, the Chief of Naval Technical Training recognized a need for a standardized curriculum and testing plan that were prescribed and implemented in 1978 (CNTECHTRAINST 1540.42). The scope of the curriculum included both reading and study skills (Chief of Naval Technical Training, 1978; Chief of Naval Technical Training, 1979; Bowman, Kaiser, Jones, & Petry, 1984). A verbal skills curriculum that focuses on listening and speaking

skills, primarily for recruits whose native language is not English, was added to the program at the Orlando and San Diego Recruit Training Centers in 1981 and the Great Lakes Recruit Training Center in 1985 (Chief of Naval Technical Training, 1980; Bowman, Kaiser, & Sherman, 1986).

The commitment of the Navy to provide fundamental skills training for enlisted personnel was reiterated through a policy statement by the Chief of Naval Operations in 1982. Specific skills identified for remediation were reading, mathematics, and communication skills (OPNAVINST 1510.11, 1982, p. 1). The policy states also that "A major goal of enlisted fundamental skills training is to achieve a minimum reading competency of the ninth grade" (p. 1).

Historically, the singular purpose of ART has been to assist recruits in acquiring the language skills required to complete recruit training successfully. While the ultimate purpose remains the same, the addition of the verbal skills component to the program expanded the scope of remediation to include listening and speaking skills of recruits who are primarily speakers of English as a second language. The population served by the program has been delimited to enlisted personnel who have not begun recruit training or have encountered academic difficulty after beginning recruit training.

The implementation of the standardized ART reading curriculum required the use of a Computer-Managed Instruction (CMI) system to perform test scoring functions. The CMI system is utilized to score the screening, diagnostic, and criterion tests employed in the program. A product of using the CMI system for test scoring is a database on the reading comprehension skill levels and educationally related characteristics of all Navy recruits. Monthly reports on the educational, aptitudinal, and reading characteristics of all recruits who begin training are routinely prepared and distributed to ART Program management personnel.

Problem

The problem defined for this study was to investigate the reading comprehension and educationally related characteristics and relationships among selected variables that describe the Navy's recruit population. The recruits who entered the Navy between June, 1986, and May, 1987, were the subjects who provided the data to address the problem. The variable of primary interest was the recruit's grade level score on reading comprehension. Other variables employed in the study were years of education, aptitude score, high school graduation status, and month of entry into the Navy.

Hypotheses

After performing descriptive analyses of the data on selected variables, six null hypotheses were tested statistically to identify differences among recruits on particular variables. The hypotheses tested were the following:

1. There are no differences in the distributions of recruits classified by reading grade level (RGL) category and month of entry into the Navy.
2. There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy.
3. There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy.
4. There is no difference in the distributions of non-high school graduate recruits classifed by the 6.0 RGL criterion and month of entry into the Navy.
5. There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy.

6. There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion.

The .05 level of significance was used in testing the hypotheses.

The importance of the study is based on two considerations. First, the analyses could identify factors on which the recruit population varies across a 12-month period. Such information would be useful to ART Program management personnel in planning for more efficient allocation and utilization of resources (e.g. staff, facilities, and instructional materials). In particular, variablity in the numbers of recruits who need remediation in language skills would have a direct effect on the requirements for staffing and instructional materials. Second, this study could demonstrate the feasibility of using CMI system data to monitor and manage the ART Program. Since these data are reported routinely to program management personnel, the data are readily available to use in making decisions on program needs and operations.

Related Research

Many research studies have been conducted on the reading skill levels of Navy enlisted personnel and training materials because of the importance of reading skills for success in training and job performance. Hoiberg, Hysham, and Berry (1974) reported a significant relationship between reading skills and successful completion of the first enlistment term in the Navy. Biersner (1975) found that many Navy training manuals are written at the 12th grade reading ability level or higher. Zierdt (1976) and Sticht (1982) concluded that the reading abilities of many recruits do not meet the skill requirements of widely used Navy materials.

Several studies have described the reading skill levels of the Navy recruit population based on the Gates-MacGinitie Reading Tests. Duffy and

Nugent (1978) found a median RGL of 11.9 on comprehension as a result of testing 31,575 recruits at the Recruit Training Center in San Diego between May, 1974, and May, 1975. The data showed that 2.8% of the recruits scored below the 4.0 RGL and 9.6% scored below the 6.0 RGL. They concluded that the reading skill levels of many recruits are well below the readability levels of the print materials used in recruit training and daily job tasks.

Bowman and Kerr (1979) reported that a sample of 14,503 recruits tested in the first few months of 1979 had a median RGL of 11.0 on comprehension while 1.1% scored below the 4.0 RGL and 5.2% scored below the 6.0 RGL. In a one-year study (1981), they found that 79,350 recruits who entered the Navy between June, 1980, and May, 1981, had a median RGL of 11.0 on comprehension with .7% scoring below the 4.0 RGL and 4.3% scoring below the 6.0 RGL. In a subsequent study (1982) based on 84,123 recruits who entered the Navy between June, 1981, and May, 1982, they reported a median RGL of 11.2 while .5% scored below the 4.0 RGL and 3.6% scored below the 6.0 RGL. They found in a more recent study (1983) on 77,347 recruits who entered the Navy between June, 1982, and May, 1983, that the median RGL was 11.4 with .9% scoring below the 4.0 RGL and 3.8% scoring below the 6.0 RGL. Kerr, Bowman, and Darcy (1984) indicated in a study on 67,740 recruits who entered the Navy between June, 1983, and May, 1984, that the median RGL was 12.1 with .7% scoring below the 4.0 RGL and 2.9% scoring below the 6.0 RGL. In a later study by Bowman and Kerr (1985), the data on 77,674 recruits who entered the Navy between June, 1984, and May, 1985, revealed a median RGL of 12.0 with .7% of the recruits scoring below the 4.0 RGL and 3.0% scoring below the 6.0 RGL. Bowman, Kerr, and Webb (1986) reported more recently on a study of 82,531 recruits who entered the Navy between June, 1985, and May, 1986, that the median RGL was 11.9 with .7% of the recruits scoring below the 4.0 RGL and 2.8 % scoring below the 6.0 RGL.

The research studies indicate that reading skills are strongly related to the success of Navy enlisted personnel while the readability levels of many training and job materials are very demanding with respect to the skill levels required for their use. Descriptive research data reveal that the reading comprehension levels of recruits declined between 1974-75 and 1979. Later studies suggest that the median reading comprehension level of recruits has increased after a brief period of stability at approximately the 11th grade level.

Procedures

The data utilized in this study were obtained from the monthly CMI reports on Navy recruit characteristics and test performance. Data were available on 79,087 recruits who entered the Navy between June, 1986, and May, 1987. The reports provided data on four variables used in this study: years of education, high school graduation status, aptitude test scores, and reading comprehension grade level scores. A fifth variable, month of entry into the Navy, was defined by the month for which each report was prepared.

The Gates-MacGinitie Reading Comprehension Test (1978), hereafter called the Gates, and the Armed Services Vocational Aptitude Battery (1967-84) are the two tests for which data were reported. The Gates, Levels D, E, or F, is utilized as a screening test for all recruits who enter the Navy. An algorithm is used with the paragraph comprehension and verbal expression scores for the Armed Services Vocational Aptitude Battery to estimate the reading skill level of each recruit and to assign the appropriate level of the Gates. During the time period covered by this study, the recruits who scored below the 8.0 RGL on the first administration of the Gates were retested with an alternate form of Level D. (The data from the first administration of the Gates are used in this study.) All recruits who scored below the 6.0 RGL on

the second administration of the Gates were assigned to ART. (Recruits may also be assigned to ART if they score between the 6.0 and 8.0 RGL or encounter academic difficulties during recruit training.)

The Armed Services Vocational Aptitude Battery (ASVAB) is administered to all recruits before they enlist in the Navy. The recruits included in this study had taken one of three series of ASVAB tests: Series 5-7, Series 8-10, or Series 11-14. The aptitude score used in the study was the Armed Forces Qualification Test (AFQT) score. The AFQT is a normative percentile score that is derived from a composite of selected ASVAB scores.

The monthly CMI reports provided means for years of education, AFQT scores of recruits classified by the 6.0 RGL criterion (above or below), and RGL scores. The median was calculated for RGL scores by month. Frequency distributions were compiled and percentage distributions were computed for all recruits on RGL categories, high school graduation status, and combinations of the variables on high school graduation status and the 6.0 RGL criterion. Proportions were calculated for high school graduate and non-high school graduate recruits who scored below the 6.0 RGL criterion.

A tabular format was used to present the means and medians as descriptive statistics. The Chi-square technique and confidence limits for differences in proportions were employed for the analyses related to testing the hypotheses. The Chi-square procedure provided comparisons of frequency distributions for RGL scores, high school graduation status, and the 6.0 RGL criterion and high school graduation status by month of entry into the Navy. Confidence interval limits were computed to compare the proportions of high school graduates and non-high school graduates who scored below the 6.0 RGL by month and composite group.

Results

The results of the study are reported in a series of nine tables. The descriptive data are depicted in the first three tables. The remainder of the tables present the data and results of the inferential analyses related to the hypotheses.

Descriptive Data

Table 1 contains the means on years of education by month of entry into the Navy for the recruits. The composite mean for the one-year time period was 11.9 years of education. The monthly means varied by only two months from 11.8 to 12.0 years. Means of 12.0 years occurred for six months--August, 1986, through November, 1986, and January, 1987.

The means presented in Table 2 are derived from the AFQT percentile scores of recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The composite means were 38.4 for all recruits who scored below the 6.0 RGL and 58.9 for all recruits who scored above the 6.0 RGL. Among the recruits with RGL scores below 6.0, the monthly means ranged from 35.2 in October, 1986, to 39.9 in April, 1987. Among the recruits with RGL scores above 6.0, the monthly means varied from a low of 55.2 in July, 1986, to a high of 62.3 in May, 1987. The differences in the means for the low and high RGL groups were about 20 percentile points for the composite means and ranged from about 17 to 25 points by month. The differences between the low and high RGL groups were relatively stable during the 12-month period.

The medians and means for RGL of recruits by month of entry into the Navy are reported in Table 3. The median for the composite group was 12.0 RGL while the mean was 9.8 RGL. The monthly medians ranged from 11.7 RGL in August, 1986, to 12.2 RGL in May, 1987. The means by month varied from a low of 9.6 RGL in March, 1987, to a high of 9.9 RGL in August - October, 1986. The

TABLE 1

MEANS ON YEARS OF EDUCATION FOR RECRUITS BY MONTH OF ENTRY

Month	N	Mean
June, 1986	8,297	11.8
July, 1986	9,405	11.9
August, 1986	8,839	12.0
September, 1986	7,310	12.0
October, 1986	5,261	12.0
November, 1986	6,058	12.0
December, 1986	5,284	11.9
January, 1987	6,186	12.0
February, 1987	6,754	11.9
March, 1987	5,471	11.9
April, 1987	5,477	11.9
May, 1987	4,755	11.9
TOTAL	79,087	11.9

TABLE 2

MEANS ON THE ARMED FORCES QUALIFICATION TEST SCORES FOR RECRUITS
BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

Month	Reading Grade Level Criterion			
	Below 6.0		Above 6.0	
	N	Mean	N	Mean
June, 1986	261	39.2	8,026	57.2
July, 1986	246	38.1	9,159	55.2
August, 1986	257	38.7	8,582	57.7
September, 1986	180	36.8	7,130	57.7
October, 1986	141	35.2	5,120	57.8
November, 1986	226	39.2	5,832	59.4
December, 1986	214	38.6	5,070	61.3
January, 1987	286	39.3	5,900	60.9
February, 1987	309	38.1	6,445	60.1
March, 1987	247	38.6	5,224	60.3
April, 1987	238	39.9	5,239	61.1
May, 1987	155	37.0	4,600	62.3
TOTAL	2,760	38.4	76,327	58.9

TABLE 3

MEDIANS AND MEANS ON READING GRADE LEVEL FOR RECRUITS
BY MONTH OF ENTRY

Month	N	Median	Mean
June, 1986	8,287	11.9	9.8
July, 1986	9,405	11.9	9.8
August, 1986	8,839	11.7	9.9
September, 1986	7,310	12.0	9.9
October, 1986	5,261	12.0	9.9
November, 1986	6,058	12.1	9.8
December, 1986	5,284	12.1	9.7
January, 1987	6,186	12.1	9.7
February, 1987	6,754	12.1	9.7
March, 1987	5,471	12.0	9.6
April, 1987	5,477	12.0	9.7
May, 1987	4,755	12.2	9.8
TOTAL	79,087	12.0	9.8

monthly medians and means did not reveal appreciable variability during the one-year time period.

Hypothesis 1

There are no differences in the distributions of recruits classified by RGL category and month of entry into the Navy. Table 4 presents the frequency and percentage distributions of recruits by RGL category and month of entry. The data on the composite group for the one-year period showed that 3.49% of the recruits had scores below the 6.0 RGL criterion--the criterion for mandatory referral to ART during this time period. The percentage of recruits who scored below the 6.0 RGL varied considerably among the 12 months as evidenced by a range from 2.46% in September, 1986, to 4.62% in January, 1987. The percentage of recruits who scored at or below the 8.0 RGL was 14.61% for the year with a monthly low of 12.77% in September, 1986, and a monthly high of 16.63% in March, 1987. While 85.39% of the composite group had RGL scores above 8.0, the monthly percentages ranged from 83.37% in March, 1987, to 87.22% in September, 1986. The Chi-square comparison of the RGL distributions of recruits by month of entry revealed significant differences across the 12 months, thereby leading to rejection of the null hypothesis tested at the .05 level of significance.

Hypothesis 2

There is no difference in the distributions of recruits classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions of recruits classified by high school graduation status are reported in Table 5. The data revealed that about 90% of the recruits were high school graduates. The percentages of high school graduates were relatively higher during July - November, 1986. The lowest percentage was

TABLE 4

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY READING GRADE LEVEL AND MONTH OF ENTRY

Month	Reading Grade Level Category						
	6.0 or below		6.1-8.0		Above 8.0		Total
	f	%	f	%	f	%	f
June, 1986	261	3.15	938	11.32	7,088	85.53	8,287
July, 1986	246	2.62	1,112	11.82	8,047	85.56	9,405
August, 1986	257	2.91	986	11.16	7,596	85.94	8,839
September, 1986	180	2.46	754	10.31	6,376	87.22	7,310
October, 1986	141	2.68	561	10.66	4,559	86.66	5,261
November, 1986	226	3.73	659	10.88	5,173	85.39	6,058
December, 1986	214	4.05	575	10.88	4,495	85.07	5,284
January, 1987	286	4.62	661	10.69	5,239	84.69	6,186
February, 1987	309	4.58	708	10.48	5,737	84.94	6,754
March, 1987	247	4.51	663	12.12	4,561	83.37	5,471
April, 1987	238	4.35	630	11.50	4,609	84.15	5,477
May, 1987	155	3.26	545	11.46	4,055	85.28	4,755
TOTAL	2,760	3.49	8,792	11.12	67,535	85.39	79,087

Chi-square = 158.198 (Chi-square = 33.924, df = 22, level of significance = .05)

TABLE 5

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1986	6,953	83.91	1,333	16.09	8,286
July, 1986	8,820	93.81	582	6.19	9,402
August, 1986	8,449	95.60	389	4.40	8,838
September, 1986	6,988	95.60	322	4.40	7,310
October, 1986	4,842	92.05	418	7.95	5,260
November, 1986	5,515	91.04	543	8.96	6,058
December, 1986	4,668	88.36	615	13.64	5,283
January, 1987	5,562	89.93	623	10.07	6,185
February, 1987	5,933	87.84	821	12.16	6,754
March, 1987	4,810	87.92	661	12.08	5,471
April, 1987	4,762	86.95	714	13.05	5,477
May, 1987	4,091	86.04	664	13.96	4,755
TOTAL	71,393	90.28	17,686	9.72	79,079

Chi-square = 1,010.058 (Chi-square = 19.68, df = 11, level of significance = .05)

in June, 1986. The comparison of the frequency distributions of recruits on high school graduation status by month of entry utilizing the Chi-square procedure indicated that the distributions differed very significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 3

There is no difference in the distributions of high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. Table 6 contains the frequency and percentage distributions of high school graduate recruits by the 6.0 RGL criterion and month of entry. The data for the composite group indicated that 3.60% of the high school graduate recruits scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of 2.55% in September, 1986, to a high of 4.87% in January, 1987. While higher percentages tended to occur in the latter months, a consistent pattern is not evident among the monthly percentages for the 12-month period. The results of the Chi-square comparison of the frequency distributions for high school graduate recruits by the 6.0 RGL criterion and month of entry showed that they differed significantly at the .05 level of significance. Consequently, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 4

There is no difference in the distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry into the Navy. The frequency and percentage distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry are depicted in Table 7. In the composite group, 2.50% of the recruits who were not high school

TABLE 6

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF HIGH SCHOOL GRADUATE RECRUITS BY SIXTH READING GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1986	223	3.21	6,730	96.79	6,953
July, 1986	229	2.60	8,591	97.40	8,820
August, 1986	252	2.98	8,197	97.02	8,449
September, 1986	178	2.55	6,810	97.45	6,988
October, 1986	137	2.83	4,705	97.17	4,842
November, 1986	212	3.84	5,303	96.16	5,515
December, 1986	194	4.16	4,474	95.84	4,668
January, 1987	271	4.87	5,291	95.13	5,562
February, 1987	278	4.69	5,655	95.31	5,933
March, 1987	227	4.72	4,583	95.28	4,810
April, 1987	218	4.58	4,544	95.42	4,762
May, 1987	149	3.64	3,942	96.36	4,091
TOTAL	2,568	3.60	68,825	96.40	71,393

Chi-square = 150.432 (Chi-square = 19.68, df = 11, level of significance = .05)

TABLE 7

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF NON-HIGH SCHOOL GRADUATE RECRUITS BY SIXTH GRADE LEVEL CRITERION AND MONTH OF ENTRY

	Reading Grade Level Criterion				
	Below 6.0		Above 6.0		Total
Month	f	%	f	%	f
June, 1986	38	2.85	1,295	97.15	1,333
July, 1986	17	2.92	565	97.08	582
August, 1986	5	1.29	384	98.71	389
September, 1986	2	.62	320	99.38	322
October, 1986	4	.96	414	99.04	418
November, 1986	14	2.58	529	97.42	543
December, 1986	20	3.25	595	96.75	615
January, 1987	15	2.41	608	97.59	623
February, 1987	31	3.78	790	96.22	821
March, 1987	20	3.03	641	96.97	661
April, 1987	20	2.80	694	97.20	714
May, 1987	6	.90	658	99.10	664
TOTAL	192	2.50	7,493	97.50	7,685

Chi-square = 27.053 (Chi-square = 19.68, df = 11, level of significance = .05)

graduates scored below the 6.0 RGL on comprehension. The monthly percentages varied from a low of .62% in September, 1986, to a high of 3.78% in February, 1987. The percentages were highly variable among the 12 months with a tendency to be higher in the latter months. The Chi-square comparison of the frequency distributions of non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry revealed that they differed significantly at the .05 level of signficance. Thus, the null hypothesis that the distributions are not different was rejected.

Hypothesis 5

There is no difference in the distributions of recruits scoring below the 6.0 RGL criterion classified by high school graduation status and month of entry into the Navy. The frequency and percentage distributions are reported in Table 8 for the recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry. The data showed that 93.04% of the recruits who obtained scores below the 6.0 RGL on comprehension were high school graduates. The monthly percentages ranged from 85.44% in June, 1986, to 98.89% in September, 1986. The percentages tended to be higher in the earlier months and lower in the latter months of the 12-month period. The comparison of the frequency distributions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry using the Chi-square technique revealed that they differed significantly at the .05 level of significance. Therefore, the null hypothesis of no difference in the distributions was rejected.

Hypothesis 6

There is no difference in the proportions of high school graduate and non-high school graduate recruits who score below the 6.0 RGL criterion. Table

TABLE 8

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				
	Yes		No		Total
Month	f	%	f	%	f
June, 1986	223	85.44	38	14.56	261
July, 1986	229	93.09	17	6.91	246
August, 1986	252	98.05	5	1.95	257
September, 1986	178	98.89	2	1.11	180
October, 1986	137	97.16	4	2.84	141
November, 1986	212	93.81	14	6.19	226
December, 1986	194	90.65	20	9.35	214
January, 1987	271	94.76	15	5.24	286
February, 1987	278	89.97	31	10.03	309
March, 1987	227	91.90	20	8.10	247
April, 1987	218	91.60	20	8.40	238
May, 1987	149	96.13	6	3.87	155
TOTAL	2,568	93.04	192	6.96	2,760

Chi-square = 57.731 (Chi-square = 19.68, df = 11, level of significance = .05)

9 presents data on the proportions of recruits who scored below the 6.0 RGL classified by high school graduation status and month of entry into the Navy. The data on the proportions of recruits who scored below the 6.0 RGL are discussed above as percentages for high school graduates and non-high school graduates separately. (See Tables 6 and 7.) An inspection of the relative proportions of the two groups revealed that a somewhat higher proportion (.0110) of the high school graduates than non-high school graduates obtained scores below the 6.0 RGL criterion for the one-year period. In 11 of the 12 months (except for July, 1986), the high school graduates had the higher proportion. The confidence limits for the comparison of the difference in the proportions for the composite groups revealed that the overall proportions differ significantly at the .05 level of significance because the limits do not include 0 within the range. The differences were also significant for 7 of the 12 months. In the seven months where significant diffferences were observed, the proportions were higher for the high school graduates than the corresponding proportions for the non-high school graduates. The results of comparing the proportions for the two composite groups required rejection of the null hypothesis of no difference in the proportions at the .05 level of significance.

Conclusions

The Navy's recruit population is described in this study based on data for selected variables that apply to the recruits entering the Navy during a 12-month time period. The conclusions are derived from the descriptive analyses and the results of testing six hypotheses about specific variables.

With regard to years of education, the typical Navy recruit has completed slightly less than 12 years of education. Nine tenths of the recruits are high school graduates. The inferential analysis on high school graduation status

TABLE 9

COMPARISON OF PROPORTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL BY HIGH SCHOOL GRADUATION STATUS AND MONTH OF ENTRY

	High School Graduate				Confidence Limits
	Yes		No		.025 to .975
Month	N	p	N	p	
June, 1986	6,953	.0321	1,333	.0285	-.0062 to .0134
July, 1986	8,820	.0260	582	.0292	-.0173 to .0109
August, 1986	8,449	.0298	389	.0129	.0051 to .0287
September, 1986	6,988	.0255	322	.0062	.0100 to .0286
October, 1986	4,842	.0283	418	.0096	.0083 to .0291
November, 1986	5,515	.0384	543	.0258	-.0016 to .0268
December, 1986	4,668	.0416	615	.0325	-.0060 to .0242
January, 1987	5,562	.0487	623	.0241	.0113 to .0379
February, 1987	5,933	.0469	821	.0378	-.0050 to .0232
March, 1987	4,810	.0472	661	.0303	.0025 to .0313
April, 1987	4,762	.0458	714	.0280	.0043 to .0333
May, 1987	4,091	.0364	664	.0090	.0162 to .0366
TOTAL	71,393	.0360	7,686	.0250	.0063 to .0147

indicates that higher percentages of high school graduates are included among the recruits during some months than other months during the year.

The aptitude of recruits as reflected by means on the AFQT does not appear to vary in any consistent pattern among the recruits with RGL scores below 6.0 or the recruits with RGL scores above 6.0. The means indicate that recruits who score above the 6.0 criterion have greater aptitude than recruits who score below the 6.0 RGL criterion. The difference in the aptitude score means for the two groups suggests that they are dissimilar populations.

The reading comprehension means of recruits exhibit relative stability across the 12-month period, placing the composite group near the 10th grade level. The median for the year places the group near the 12th grade level. The median for the composite group shows a discontinuation of a previous trend toward higher comprehension levels among recruits as reported for four earlier 12-month periods (Bowman & Kerr, 1981; Bowman & Kerr, 1982; Bowman & Kerr, 1983; Kerr, Bowman, & Darcy, 1984) and possibly stablization as shown for the two immediately preceding 12-month periods (Bowman & Kerr, 1985; Bowman, Kerr, & Webb, 1986).

The frequency distributions of recruits by RGL categories reveal differences in the composition of the recruit groups when considered by month of entry into the Navy. Separate analyses of the distributions of high school graduate and non-high school graduate recruits classified by the 6.0 RGL criterion and month of entry indicate that differences also exist across the 12-month period for both groups. Higher percentages of recruits in both groups tend somewhat to score below the 6.0 RGL in the latter months of the period.

Differences exist in the 12-month distributions of recruits who obtain RGL scores below 6.0 when classified by high school graduation status and month of entry in the Navy. Higher percentages of the recruits who score below the 6.0

RGL are high school graduates in the earlier months of the period. A higher proportion of the composite group of high school graduate recruits score below the 6.0 RGL than is found in the composite group of non-high school graduate recruits.

The findings suggest that the recruit population remains relatively stable, showing only slight variability with regard to means on years of education, reading comprehension skills, and aptitude scores. Several variables reveal variability across the 12-month period. Factors for which distributions by month differ include RGL scores, high school graduation status, high school graduate and non-high school graduate recruits who score above and below the 6.0 RGL criterion, and high school graduation status of recruits who score below the 6.0 RGL.

This study indicates that the recruits who enter the Navy are likley to vary in different months of the year on some important factors. As a result, ART management personnel need to plan for adjustments in the requirements for resources as the recruit population changes throughout the year. By being aware of the variability in demands, more efficient allocation and utilization of the resources can be achieved for ART and the Recruit Training Centers. The study also demonstrates that information is available through the monthly CMI reports on Navy recruit characteristics to improve the effectiveness of program management. Consistent monitoring of these reports and basic analyses of the data would enable the staff to determine the changes occuring in the composition of the recruit population that affect the ART Program.

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